

Listed are synopses of recent papers and books that should be of interest to the readers of the *IBM Systems Journal*. Inquiries should be directed to the publications or publishers cited.

Suggested reading

Queuing models of computer systems, Arnold O. Allen (DPD SSI Los Angeles, CA), *Computer* 13, No. 4, 13-24 (April 1980). There is a wide spectrum of computer system modeling techniques ranging from the simplicity of rules of thumb to the complexity of benchmarking. The rule of thumb technique falters as one moves from day to day operations to predicting future workload and capacities. Benchmarking and simulation, although both widely used, share cost and complexity problems. Recently, queuing models have been gaining in popularity. This paper gives a basic explanation of analytical queuing theory and illustrates its use to create analytic models of computer systems through several examples.

Approximate solution of queuing models, Charles H. Sauer (RES Yorktown Heights, NY) and K. Mani Chandy (University of Texas at Austin), *Computer* 13, No. 4, 25-31 (April 1980). There are some characteristics of computer system models that do not lend themselves to exact analytic modeling. This paper discusses these characteristics and the use of approximation to get reasonably accurate solutions to a realistic model.

Data structures, types, and abstracts, K. S. Shankar (FSD Bethesda, MD), *Computer* 13, No. 4, 67-77 (April 1980). This paper is a tutorial on the subject of data types, structures, and abstractions. These concepts are examined separately and in relationship to each other. They are also related to programming methods, programming languages, and to a limited degree to system hardware. A unified way of looking at these concepts is developed by creating the notion of an abstract data type. The author suggests that by using this concept of data abstraction during the software development process one can increase the clarity and reliability of the resulting software system.

Data base: Structured techniques for design, performance and management, S. Atre (DPD New York, NY), John Wiley & Sons, Inc., New York, 1980. 435 pp. (ISBN-0-471-05267-1). Much of the material for this book comes from a course taught by the author at the IBM Systems Science Institute. The book presents a step-by-step sequence that can be followed in designing a data base. There are three major sections: administration dealing with installing and maintaining a data base, design at both the conceptual and logical levels, and a variety of performance topics. The presentation gives an organized complete introduction to the subject of data base, supplemented with case studies which make the book a good basic learning tool.

Of particular interest is Chapter Five, which covers designing a conceptual data model. This design process uses concepts from relational data theory, particularly the normalization process. While the model is built on relational concepts, the implementation is independent of any particular structure and can be mapped onto network, hierarchical, or relational structures. The methodology throughout the book is also independent of any particular software package or approach.

An introduction to network architectures and protocols, Paul E. Green, Jr. (RES Yorktown Heights, NY), *IEEE Transactions on Communications* 28, No. 4, 413-424 (April 1980). This issue of the journal is devoted to the subject of computer networks and how they are put together. Paul Green served as guest editor for the issue and wrote the introductory paper, a tutorial on computer networks. This paper discusses the functions a network provides and how the architecture of the network is constructed to handle those functions. The paper also includes brief descriptions of several well-known network architectures.

Path control: The transport network of SNA, James D. Atkins (CHQ Armionk, NY), *IEEE Transactions on Communications* **28**, No. 4, 527-538 (April 1980). This paper describes the structure of the path control layer of SNA, focusing on connectivity, routing, and flow control. The end user's view is presented, as well as underlying formats and protocols.

SNA function management, Verlin L. Hoberecht (SCD Kingston, NY), *IEEE Transactions on Communications* **28**, No. 4, 594-603 (April 1980). The structure and semantics of messages and protocols used by one logical unit to manage functions performed by a remote logical unit is the subject of this paper. Examples using SNA printers and IBM 3270 displays are given.